

Claims

1. Method of processing, by machine, composite components (2) comprising at least a support device (3) and a stamp pad (4) by means of a processing device (1), whereby, in order to process the composite component (2), at least one operating head (10) of a material-removing unit (6) and the composite component (2) are moved relative to one another by means of a handling unit (7) controlled and/or regulated by a control unit (9), in particular in an XY plane, and material is removed from the composite component (2) by the material-removing unit (6), wherein the stamp pad (4) of the composite component (2) which is at least partially joined to the support device (3) is divided into several pad parts (11) spaced at a distance apart from one another by means of a dividing gap (42) by the material-removing unit (6).
2. Method as claimed in claim 1, wherein at least one cutting line (43) is defined on the composite component (2) by means of the control unit (9), in particular on a processing surface (39), and the stamp pad (4) is split into the pad parts (11) along the cutting line (43).
3. Method as claimed in claim 1 or 2, wherein material is continuously removed across a thickness (41) of the stamp pad (4), preferably along the cutting line (43), in order to form the dividing gap (42) and a composite component (2) with non-connected pad parts (11) is thus produced.
4. Method as claimed in one or more of the preceding claims, wherein once the stamp pad (4) has been cut into several pad parts (11), it is preferably provided with stamping ink (47) or inking fluids by means of an ink dispenser unit (46).
5. Method as claimed in claim 4, wherein the pad parts (11) are provided with different and/or the same type, in particular differently coloured and/or identically coloured, stamping inks (47) or inking fluids.
6. Method as claimed in one or more of claims 4 or 5, wherein ink is dispensed by the ink dispenser unit (46) in the form of ink drops (58), which are dripped through one or more outlet orifices (55) in the direction of at least one application point (56) on one of the pad parts (11).

7. Method as claimed in one or more of claims 4 to 6, wherein several application points (56) of a pad top face (57) of the stamp pad (4) are fixed or pre-set by the control unit (9), in particular in a grid pattern.
8. Method as claimed in one or more of claims 4 to 7, wherein different types of stamping ink (47) for the different pad parts (11) are dispensed respectively via different outlet orifices (55), each with a flow connection to separate housing chambers in stamping ink containers (51) and/ or different types of stamping inks (47) for the different pad parts (11) are dispensed via a single outlet orifice (55) which can be connected to several different housing chambers in stamping ink containers (51) for different stamping ink (47).
9. Method as claimed in one or more of claims 4 to 8, wherein several different types, in particular differently coloured, stamping inks (47) are mixed and different types or colours of stamping inks (47), in particular from the palette of the RGB, CMYK colours etc., are created in readiness for application to the pad parts (11) by, for example, an additive process of mixing specifically metered quantities of stamping inks (47).
10. Method as claimed in one or more of claims 4 to 9, wherein at least the outlet orifice (55), in particular an outlet nozzle, of the ink dispenser unit (46) is positioned on the different application points (56) in order to dispense ink, preferably at grid points.
11. Method as claimed in one or more of claims 4 to 10, wherein ink is applied in pulses to the application points (56) by means of one or more ink drops (58).
12. Method as claimed in one or more of claims 4 to 11, wherein the stamping ink (47) is dispensed by a fluid ejection from the at least one outlet orifice (55) by briefly applying an over-pressure, in particular a pressure surge, at least in the region of the outlet orifice (55), preferably in the ink containers (51).
13. Method as claimed in one or more of claims 4 to 12, wherein the outlet orifice (55) is sealed to prevent unintentional dispensing of ink by means of a shut-off device (70) which can be switched into a position permitting a passage by applying force and which is preferably in the closed position in the normal state, in particular a check valve (71).

14. Method as claimed in one or more of the preceding claims, wherein at least one effector unit (19), which preferably incorporates at least one dispensing unit (48) of the ink dispenser unit (46) and the operating head (10) of the material-removing device (6), can be displaced and positioned by means of the handling unit (7).

15. Method as claimed in one or more of the preceding claims, wherein surface part-regions (59) are set and/or can be set by the control unit (9) on the processing surface (39) of the composite component (2), in particular the stamp pad (4), after which the stamp pad (4) is cut, preferably into the individual pad parts (11) on the basis of these surface part-regions (59).

16. Method as claimed in claim 15, wherein the cutting line (43) between mutually adjacent surface part-regions (59) along which at least the material-removing unit (6) is moved by the handling unit (7) is fixed by means of the control unit (9).

17. Method as claimed in one or more of the preceding claims, wherein the support device (3) for the stamp pad (4) and the pad parts (11) on a base plate are scored along the cutting line (43) simultaneously with the cutting process of the stamp pad (4) by the material-removing unit (6) and/or is partially severed at retaining projections in the region of the processing surface (39).

18. Method as claimed in one of more of the preceding claims, wherein the effector unit (19) or individual components of the effector unit (19) are displaced and positioned in an XY plane, in particular in a Cartesian co-ordinate system based on two co-ordinates, by means of the handling unit (7) controlled by the control unit (9).

19. Method as claimed in one or more of the preceding claims, wherein the surface part-regions (59) are set from an input and/or output device (61) co-operating with the control unit (9).

20. Method as claimed in one or more of the preceding claims, wherein a diagram (61c), in particular a stamp surface of a stamp plate, is displayed at the input and/or output device (61), in particular an output unit (61a) of a computer unit (62) such as a personal com-

puter for example, and the diagram (61c) is divided into several part regions (66, 67) via the input and/or output device (61), in particular the input unit (61b).

21. Method as claimed in claim 20, wherein the part regions (66, 67) are divided by setting several engraved patterns to be formed and applied to the diagram (61c), for example characters, and these engraved patterns are then formed on a stamp plate preferably by means of the material-removing unit (6).

22. Method as claimed in one or more of claims 19 to 21, wherein the surface part-regions (59) and cutting lines (53) on the stamp pad (4) for cutting the stamp pad (4) into pad parts (11) are fixed depending on the number and shape of the part regions (66, 67) or engraved patterns by means of the control unit (9).

23. Method as claimed in one or more of the preceding claims, wherein the control and/or regulating procedures and computing routines of the control unit (9), for example fixing the cutting lines (43), the surface part-regions (59), positioning the handling unit (7) etc., are run by software means.

24. Method as claimed in one or more of the preceding claims, wherein, once the part regions (63, 64) or engraved patterns have been fixed by means of the input and/or output device (61), the regions or cutting lines are automatically divided by the software means in order to produce the pad parts (11) and/ or stamp plate.

25. Method as claimed in one or more of the preceding claims, wherein material is removed by the material-removing unit (6) by energy (34) irradiated from a radiation source (33), in particular a laser beam (38) of a laser system (36).

26. Processing device (1), at least incorporating a material-removing unit (6) and a handling unit (7), whereby at least one operating head (10) of the material-removing unit (6) can be adjusted, in particular moved, by means of the handling unit (7) at least in an XY plane, and the handling unit (7) is connected to a control unit (9) in order to control and/or regulate it, wherein the processing device (1) has an ink dispenser unit (46) for dispensing stamping ink (47) as required, in particular inking fluids.

27. Processing device as claimed in claim 26, wherein the handling unit (7) is designed to displace at least one outlet orifice (55) of the ink dispenser unit (46) relative to a work-piece holder (8), for example.

28. Processing device as claimed in claim 26 or 27, wherein the ink dispenser unit (46) has at least one dispensing unit (48) with one or more dispenser nozzles (49) for stamping ink (47).

29. Processing device as claimed in one or more of claims 26 to 28, wherein in order to set up an effector unit (19) for co-operating with the handling unit (7), at least the dispensing unit (48) of the ink dispenser unit (46) and/or at least the operating head (10) of the material-removing unit (6) co-operates with it and the latter are preferably disposed on a retaining unit (32) of the effector unit (19) and are coupled therewith in displacement.

30. Processing device as claimed in one or more of claims 26 to 29, wherein the effector unit (19), in particular the retaining unit (32), is designed so that it can be positioned and displaced by means of the handling unit (7).

31. Processing device as claimed in one or more of claims 26 to 30, wherein the ink dispenser unit (46) has at least one outlet orifice (55) in the form of a discharge passage (54) for dispensing the stamping ink (47).

32. Processing device as claimed in claim 31, wherein the outlet orifice (55) is disposed on the dispenser nozzle (49) and the outlet orifice (55) has a flow connection to at least one housing chamber for the stamping ink, in particular an ink container (51).

33. Processing device as claimed in one or more of claims 26 to 32, wherein the ink dispenser unit (46) has several nozzles (49) with outlet orifices (55).

34. Processing device as claimed in one or more of claims 31 to 33, wherein the one or more outlet orifices (55) of the dispenser nozzles (49) each have a flow connection to a flow passage (52) for stamping ink (47) in fluid lines (50).

35. Processing device as claimed in one or more of claims 26 to 34, wherein the at least one ink container (51) is preferably disposed in a stationary arrangement on a production system (14) and its housing chamber for stamping ink (47) preferably has a flow connection via at least one fluid line (50) to the outlet orifice or orifices (55).

36. Processing device as claimed in one or more of claims 26 to 35, wherein the ink dispenser unit (46) has a metering unit (67) to enable controlled dispensing of stamping ink (47).

37. Processing device as claimed in claim 36, wherein the metering unit (67) is provided in the form of a pressure generator (68), which is actively connected to the ink delivery system, in particular the ink containers (51) and/or the fluid lines (50) and/or the discharge passage (54), at least in the region of the outlet orifice (55).

38. Processing device as claimed in one or more of claims 26 to 37, wherein a shut-off device (70), in particular a check valve (71), is provided, preferably in the region of the outlet orifice (55) in the ink delivery system, in particular the dispenser nozzle (49) or the fluid line (50), in order to provide a fluid-tight seal of the outlet orifice (55).

39. Processing device as claimed in one or more of claims 26 to 38, wherein a housing chamber (53) of the at least one dispenser nozzle (49) has a flow connection or can be placed in a flow connection with several ink delivery systems, in particular flow passages (52).

40. Processing device as claimed in one or more of claims 26 to 39, wherein the handling unit (7) has at least one guide system (26, 28) and at least one drive mechanism (22, 29) for displacing and positioning preferably the effector unit (19).

41. Processing device as claimed in one or more of claims 26 to 40, wherein the drive mechanism (22, 29) is actively connected to the control unit (9) for control and/or regulation purposes and the drive mechanism (22, 29) is designed for adjusting and moving a support arm (25) and/or the retaining unit (31) of the effector unit (19) as necessary by means of the guide system (26, 28).

42. Processing device as claimed in one or more of claims 26 to 41, wherein the control unit (9) has a memory unit in which software means are stored.
43. Processing device as claimed in one or more of claims 26 to 42, wherein the control unit (9) is provided in the form of an input and/or output unit (61), in particular a computer unit (62), connected via an interface to the processing device (1), in particular the material-removing unit (6) and/ or the handling unit (7) and/or the ink delivery system (46).
44. Processing device as claimed in one or more of claims 26 to 43, wherein the material-removing unit (6) is provided in the form of a radiation source (33), in particular a laser system (36).